VH-TCFA number. Finally, cTnI was also associated with future MACE on univariate analysis (HR 2.2, 95%CI 1.2-4.0, p=0.007).

**CONCLUSIONS** Increased baseline cTnI in patients with stable angina is associated with the presence of vulnerable plaques and future MACE. These results suggest a potential mechanism underlying the prognostic value of cTnI in patients with stable angina.

**CATEGORIES IMAGING:** Vulnerable Plaque

# ACUTE CORONARY SYNDROMES

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**Abstract nos: 170 - 186**

## TCT-170

### Safety and efficacy of bivalirudin during percutaneous intervention in acute coronary syndrome in the real world. The CARTAGOMAX study

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**BACKGROUND** The role of anticoagulants during percutaneous coronary intervention (PCI) in acute coronary syndrome (ACS) is increasingly important. The CARTAGOMAX study aims to assess the efficacy and safety of bivalirudin (BIVA) versus unfractionated heparin (UFH) plus glycoprotein IIb/IIIa inhibitors (GPI) during PCI in the real world.

**METHODS** We performed a single-center and prospective study. All patients with acute coronary syndrome (with and without ST segment elevation) who underwent percutaneous coronary intervention in our cardiac catheterization laboratory between January 2010 and December 2014 were eligible for inclusion. All received loading dose of aspirin and clopidogrel. Patients were successively anticoagulated either with BIVA or with UFH plus GPI, in a 2:1 ratio. The main objective was to compare mortality and major bleeding rates at 1, 6 and 12 months of follow-up. As secondary objectives, the presentation of stroke, reinfarction and stent thrombosis was analyzed. All patients signed informed consent. Study protocol was approved by our hospital ethics committee. We performed univariate analysis and binary logistic regression analysis. Survival analysis was performed using Kaplan-Meier method using the log rank test, which is expressed followed by relative risk (RR) with the 95% confidence interval.

**RESULTS** A total of 1800 patients were included. 31,6% were diagnosed with ACS with ST segment elevation and 68,4% with ACS without ST segment elevation. 1183 (65,7%) of patients received BIVA and 617 (34,3%) were treated with UNH+GPI. Baseline characteristics are shown in table 1. No significant differences in mortality were observed between the two groups at 30 days (p=0,231; RR 0,8-2,2) and at 6 months follow-up (p=0,12; RR 0,9-2,1 ). At one year follow-up, a non-significant trend to lower mortality was observed in the bivalirudin group (p=0,052; RR1,01-2,15). The incidence of major bleeding was higher in the arm treated with UNH+GPIat 1 month (p=0,001; RR 1,4-40,9), at 6 months (p=0,009 RR 1,2-5,05) and at 12 months (p=0,061; RR 0,9-3,3).Similar results were obtained when the occurrence of cerebral ischemic events was analyzed. The incidence of stroke ratio was lower in the BIVA arm at 1 month (p=0.015; RR 1,4-40,9), at 6 months (p=0,003; RR 1,6-24,6) and at 1 year (p=0,032; RR 1,03-7,8). The rates of re-infarction were similar in both groups. A nonsignificant trend to higher stent thrombosis in the BIVA arm was observed.

| | Heparin + IGP | Bivalirudin | Total | p value |
|---|---|---|---|---|
| Age, years | 66,18 ± 12,2 | 67,14 ± 12,5 | 66,61 ± 12,49 | 0,119 |
| Female gender | 129 (20,9) | 327 (27,7) | 456 (25,3) | 0,002 |
| dyslipidemia | 280 (45,4) | 620 (53,4) | 900 (50) | 0,005 |
| Hypertension | 339 (54,9) | 754 (63,7) | 1093 (60,7) | 0,001 |
| Diabetes | 211 (34,2) | 513 (43,4) | 724 (40,2) | 0,001 |
| Smoking | 286 (46,4) | 537 (45,4) | 823 (45,7) | 0,698 |
| Radial access | 278 (45,2) | 723 (61,6) | 1001 (56) | 0,001 |
| LVEF | 54,36 ± 11 | 54,38 ± 11 | 59,41 ± 14,76 | 0,971 |
| No diseased vessels | 1,73 ± 0,76 | 1,76 ± 0,81 | 1,75 ± 0,8 | 0,527 |
| No treated vessels | 1,15 ± 0,39 | 1,24 ± 0,46 | 1,21 ± 0,44 | 0,001 |
| No implanted stents | 1,8 ± 1,06 | 1,77 ± 1,04 | 1,78 ± 1,05 | 0,654 |
| GFR, ml/min/ 1,73m2 | 87,9 ± 44,57 | 87,7 ± 42,52 | 87,8 ± 43,17 | 0,925 |
| Platelets, mcL | 217610 ± 64750 | 221380 ± 91120 | 220200 ± 83773 | 0,405 |
| Contrast, ml. | 340 ± 178,68 | 286 ± 128,18 | 305,1 ± 149,53 | 0,001 |

**CONCLUSIONS** In the CARTAGOMAX study the use of bivalirudin during PCI is presented as an effective and safe option, with a lower rate of major bleeding and stroke, and similar mortality and stent thrombosis over the use of UFH plus a GPI.

**CATEGORIES CORONARY:** Acute Coronary Syndromes

**KEYWORDS** ACS, Bivalirudin, Coronary Angioplasty

## TCT-171

### Clinical Outcomes Using Prasugrel or Ticagrelor Based On Physician Treatment Decisions In Patients With Acute Coronary Syndrome Undergoing Percutaneous Coronary Intervention: Comparative Results Using Propensity Analysis Of A Payer Database

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**BACKGROUND** Prasugrel and ticagrelor are potent P2Y12 ADP receptor inhibitors that have greater clinical efficacy compared with clopidogrel, but more non-CABG bleeding. There are no direct comparisons of clinical outcomes between the drugs with follow-up through 1 year. This retrospective study compared 1 year post discharge outcomes between the 2 agents in acute coronary syndrome patients (pts) managed with percutaneous coronary intervention (ACS-PCI) using a claims database.

**METHODS** ACS-PCI pts ≥ 18 years, with no history of TIA or stroke, a physician visit ≤90 days post discharge, and at least 1 outpatient pharmacy fill ≤30 days post discharge for prasugrel or ticagrelor, but not both, were included. Data from the ProMetis Lx database were propensity matched for prasugrel use with a 3 prasugrel:1 ticagrelor ratio. Unadjusted clinical outcomes were assessed using descriptive methods on an as treated basis. Propensity matched clinical outcomes were compared using Cox proportional hazards models and Kaplan-Meier analysis. Post discharge net adverse clinical events (NACE) at 1 year was evaluated for non-inferiority of outcomes between the 2 populations using a 20% margin. NACE was a composite of major adverse cardiovascular events (MACE) or rehospitalization for bleeding. MACE was the composite of all-cause death, coronary revascularization, or rehospitalization for MI, unstable angina (UA), TIA/stroke, or CHF.

**RESULTS** Of the 173,484 ACS-PCI pts in the database, 15,788 were included (prasugrel 12,797; ticagrelor 2,991). Compared with ticagrelor pts, prasugrel pts were younger, less likely to be female, have prior MI, diabetes, or present with NSTEMI; more likely to have UA; no significant difference in the rate of STEMI. Prior to matching, prasugrel pts had lower rates of NACE and MACE (p<0.01), with no difference in bleeding (Table), compared with ticagrelor pts. After propensity matching, there was no significant difference in baseline characteristics between the two groups. Non-inferiority was demonstrated related to outcomes associated with prasugrel use compared with outcomes associated with ticagrelor use (Table). Rates of NACE and MACE remained significantly lower in the

prasugrel group, although the difference was primarily driven by CHF with no significant difference in the rate of all-cause death, MI, UA, coronary revascularization, or TIA/stroke (Table).

**CONCLUSIONS** In this "real-world", retrospective, observational study in ACS-PCI pts, physicians preferentially used prasugrel in younger pts with lower risk of bleeding or comorbidities compared with ticagrelor, although clinical outcomes associated with prasugrel were noninferior to those associated with ticagrelor.

| | Unmatched | | | Matched | | | |
|---|---|---|---|---|---|---|---|
| | Prasugrel N=12,797 | Ticagrelor N=2,991 | p | Prasugrel N=6,969 | Ticagrelor N=2,323 | p | P-NI (20% margin) |
| | n (%) | n (%) | | n (%) | n (%) | | |
| NACE | 2,254 (17.6%) | 593 (19.8%) | 0.005 | 1,176 (16.9%) | 446 (19.2%) | 0.01 | <0.0001 |
| MACE | 2,053 (16.0%) | 542 (18.1%) | 0.006 | 1,078 (15.5%) | 405 (17.4%) | 0.03 | <0.0001 |
| Rehospitalization for bleeding | 393 (3.1%) | 99 (3.3%) | 0.50 | 196 (2.8%) | 76 (3.3%) | 0.26 | 0.0005 |
| All-cause death, MI, or stroke | 429 (3.4%) | 117 (3.9%) | 0.13 | 231 (3.3%) | 89 (3.8%) | 0.24 | <0.0001 |
| Coronary Revascularization | 1,432 (11.2%) | 347 (11.6%) | 0.52 | 728 (10.4%) | 272 (11.7%) | 0.09 | <0.0001 |
| CHF | 481 (3.8%) | 164 (5.5%) | <0.001 | 265 (3.8%) | 114 (4.9%) | 0.02 | <0.0001 |

NACE = Net adverse clinical events; MACE = Major adverse cardiac events; MI = Myocardial infarction; CHF = congestive heart failure; NI = Non-inferiority

**CATEGORIES CORONARY:** Acute Coronary Syndromes

**KEYWORDS** Outcomes research, Prasugrel, Ticagrelor

## TCT-172

### Spontaneous Coronary Artery Dissection: Clinical Characteristics, Management and Outcomes in a Large Community Based Cohort

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**BACKGROUND** Spontaneous coronary artery dissection (SCAD) is a rare and poorly understood cause of acute coronary syndrome (ACS) and sudden cardiac death. It occurs predominantly in young women who do not have risk factors for atherosclerosis, with an increased proportion occurring in the peripartum period. The prevalence of SCAD has been reported to range from 0.1% to 4% of ACS presentations. The purpose of this study is to evaluate the clinical characteristics, management and outcomes of SCAD in a large retrospective cohort of patients.

**METHODS** This study was conducted in the Northern California Kaiser Permanente (KP) healthcare system using electronic databases and medical charts. Coronary angiograms and, when available, intravascular ultrasound from all potential SCAD cases were independently reviewed by two interventional cardiologists. Healthy controls with at least 9 months of KP enrollment prior to SCAD case date were selected in a 3:1 ratio from the KP database, matching for age, sex and follow up time from matched SCAD date. Major adverse cardiovascular events (MACE) including recurrent SCAD, myocardial infarction (MI), congestive heart failure hospitalization (CHF) and death after the initial hospitalization were obtained during follow up.

**RESULTS** 111 patients during 2003-2012 were identified as having SCAD, 333 matching healthy controls were selected. The median follow-up was 38 (range 7-119) months. SCAD patients had a mean age of 48.1 ± 11 years, 93% were female. 9 out of 103 (9%) women were postpartum. 91% presented with acute myocardial infarction, 23% had ST elevation on EKG. The left anterior descending artery was the most frequently involved (72%) coronary artery. Precipitating emotional or physical stress was reported in 12.6%. Fibromuscular dysplasia was identified in 23% of femoral angiograms performed. 47% were successfully treated conservatively without needing further revascularization. Among the 51% who had percutaneous coronary intervention in-hospital, 2 required coronary artery bypass surgery for SCAD extension. Hyperlipidemia and pregnancy were significantly more frequent in SCAD cases than controls. Among SCAD patients, MACE occurred in 9% (0 deaths, 3 recurrent SCAD, 5 MI, 1 CHF) and among the controls, MACE occurred in 1% (1 non cardiovascular related death, 1 MI, 1 CHF). 47% SCAD patients had at least one repeat emergency room visit or hospitalization for troponin-negative chest pain. 19 of 44 (43%) repeat angiographies were performed more than 20 days after initial SCAD, with 80% of them showing spontaneous healing.

**CONCLUSIONS** SCAD affects predominantly young women, majority presenting as acute myocardial infarction. Pregnancy and hyperlipidemia are more frequent in SCAD than controls. All patients treated conservatively initially did not require revascularization. The SCAD recurrence rate was very low and the mortality rate was zero. However there was a high rate of troponin-negative chest pain emergency room visit or hospitalization during follow-up.

**CATEGORIES CORONARY:** Acute Coronary Syndromes

**KEYWORDS** Spontaneous coronary artery dissection

## TCT-173

### Predictors of Sub-Acute Stent Thrombosis in Acute Myocardial Infarction Patients Treated with Primary Percutaneous Angioplasty

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**BACKGROUND** Subacute stent thrombosis (SST) (0 - 30 days) remains an important complication post primary percutaneous intervention (PPCI), with morbidity and mortality reaching those of spontaneous myocardial infarction. To date, our information on angiographic and clinical predictors of SST in ST- segment elevation myocardial infarction (STEMI) patients treated with PPCI is limited. We tried to analyse the clinical and angiographic predictors of SST in a large cohort of STEMI patients treated with PPCI and coronary stent deployment. Secondly, we wanted to assess if SST is associated with higher 30-day mortality in the current era.

**METHODS** We identified all the patients presenting as STEMI between June 2004 and January 2011 who underwent PPCI with stent deployment as the primary mode of revascularization. Diagnosis of stent thrombosis was made as per the standard definition proposed by the Academic Research Consortium (ARC). Patients were divided into with and without SST. Patients in both groups were compared for basic clinical and angiographic characteristics.

**RESULTS** A total of 2303 patients underwent PPCI with coronary stent deployment. The overall rate of SST was 1% (n = 24). Definite and probable EST occurred in 22 and 2 patients respectively. All but 1 patient with SST had received bare metal stent. The baseline characteristics of the patients are shown in Table 1. There was no significant difference between access site (transradial vs. femoral), type of anticoagulant use (bivalirudin vs. heparin), aspiration thrombectomy, use of GPIIbIIIa or the infarct related artery between the two groups. Patients with SST had higher in-hospital (p = 0.03) and 30 day mortality (p = 0.048). However, there was no significant difference in mortality at 6 months between the two groups. The rate of cardiogenic shock (p = 0.0006) and cerebrovascular accident (p = 0.0004) was higher in the SST group. On IVUS imaging of SST cases, under deployment of stent and uncovered plaque area was noted in nearly half of the cases.

| | SST (N=24) | No SST (N=2279) | P Value |
|---|---|---|---|
| Men | 20 (83%) | 1670 (73%) | 0.26 |
| Age (yrs) | 59 ± 11 | 61 ± 13 | 0.37 |
| Hypertension | 9 (38%) | 1076 (47%) | 0.34 |
| Diabetes | 2 (8%) | 387 (17%) | 0.26 |
| Hyperlipidemia | 11 (46%) | 884 (39%) | 0.56 |
| Smoking | 9 (38%) | 965 (42%) | 0.63 |
| Previous MI | 2 (9%) | 280 (12%) | 0.54 |
| Previous CABG | 0 | 73 (3%) | 0.37 |
| BMI | 28 ± 5 | 27 ± 4 | 0.21 |
| Systolic BP (mmHg) | 132 ± 24 | 131 ± 20 | 0.48 |
| Hemoglobin (g/dl) | 141 ± 18 | 141 ± 24 | 0.26 |
| Creatinine (mmol/L) | 96 ± 53 | 96 ± 34 | 0.96 |

**CONCLUSIONS** Incidence of SST in PPCI cohort is around 1%. It is still associated with higher mortality and cardiogenic shock. Under